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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#26

Title : Motor Operated Fast Food Service Window with Upwardly Focused Proximity Detectors

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CERTIFICATE OF MAILING (37 C.F.R. 1.10)

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OK 17 APRIL 2001  
*John R. Merkling*  
John R. Merkling

**37 C.F.R. 1.132 DECLARATION OF JAMES C. EPPS**

I, James C. Epps, declare that:

1. I am a citizen of Harris County, in the state of Texas in the United States of America, and I reside at 16001 Kevindale, Houston, TX.
2. Since approximately 1985, I have been, and am currently, employed by Quikserv Corporation (formerly M.C.E. Systems Corporation).
3. My current position is President and CEO.
4. Over the past approximately 16 years, I have obtained a knowledge of the level of ordinary skill in the field of fast food service window supply design and manufacture.

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5. In 1990, I and Bob Kramer, Jack Weaver and Mark Neubauer at M.C.E. Systems Corporation (now, Quikserv Corporation) tried to develop a fast food service window with proximity sensors.
6. Relying on the example of doors using proximity sensors, we used a sensor that was directed generally horizontally. Like the sensors shown in Jonsson, US Patent 4,560,912, the sensors were aimed to sense the torso of a person approaching a door.
7. We found that sensors directed to detect the torso of a person approaching a service window were not satisfactory. The area around a fast food service window is a "noisy" environment. That is, there are many false signals in the area. Unlike a door, the employee stays in the general area of the window, taking orders, getting food items and performing other tasks. Proximity sensors aimed to sense the torso of the employee opened the window at undesirable times.
8. Moreover, we found that the range of the outwardly-directed sensors cannot be set sufficiently accurately for this environment. A light-emitting proximity sensor is sensitive not only to the distance of an approaching person, but also to the color of a reflecting surface. A person wearing light colored clothing is detected sooner and more frequently than a person wearing dark clothing. Sensors directed to detect the torso of an employee therefore respond differently to different stimulations. If the sensitivity of the sensor is diminished, to avoid oversensing, employees in dark clothing may be undersensed or not sensed at all. If the sensitivity of the sensor is increased, employees in light clothing may trigger false openings even when not wanting the window to open.
9. We tried to place windows with horizontally directed sensors with Burger King, Jack-in-the-Box and others, but there were so many complaints that we had to withdraw the windows from our offerings.

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10. I am familiar with proximity sensor-operated service windows from Reltec Equipment Inc. These windows have been offered for sale since at least 1989. The Reltec windows were an attempt to use optical proximity sensing in service windows. They featured horizontally directed sensors that detected the torso of the employee. Wendy's was a customer of Reltec. Windows with sensors focused upward at an angle that deviates from a vertical direction by not more than about 10° have replaced the older technology at Wendy's since these windows have become available from Quikserv.
11. Another attempt by the industry to use proximity sensors in service windows were windows offered by Horton Automatic and by Ready Access from at least 1989. These windows featured downwardly directed sensors mounted above the service window. These sensors still detect the torso of the employee when the employee approaches the window.
12. One of the users of the downward sensor windows was What-a-Burger Fast Food Chain. What-a-Burger was dissatisfied with the performance of the downward sensor windows and requested an improvement. Horton did not provide the improvement, and What-a-Burger approached M.C.E. Systems (Quikserv). In response to this request, the inventors developed the service window with upwardly-pointing sensors. The sensors are directed into a region where the torso of the employee is not sensed. The window opens when the employee wants it to open by sensing an object directly above the sensors.
13. This new technology has supplanted service windows with both downward and outwardly directed sensors by allowing the employee complete control of when the window opens.

14. Based on approximately 16 years experience, it has been a goal of fast food service window providers (including Quikserv) to provide a fast food service window that does not generate too many false open and/or false close operations and also allows more freedom of movement by employees using proximity sensors. This corresponds to the more general problem of controlling an automatic door with proximity sensors, which has been recognized by others in patent literature, for example, discussed below.
15. Fast food service windows incorporating upwardly focused proximity sensors focused upward at an angle that deviates from a vertical direction by not more than about 10° satisfy this long-felt need because they are essentially manually controlled and are not dependant on the position of the employee's torso. The employee controls the window with her hand or arm rather than with the body, despite the fact that the employee is using the hand or arm for other purposes, such as receiving payment or delivering product to a customer.
16. Customers purchasing Quikserv's fast food service windows incorporating upwardly focused proximity detectors sensors focused upward at an angle that deviates from a vertical direction by not more than about 10° in accordance with the claimed invention include: Wendy's International, Burger King Brands, Arby's Incorporated, KFC Corporation (Kentucky Fried Chicken), Foodmaker Incorporated (Jack in the Box), Shell Oil Company, Chevron Corporation, Pizza Hut Incorporated, Church's Fried Chicken Incorporated, and Popeyes Chicken & Biscuits (America's Favorite Chicken Company).
17. The fact that proximity sensor automatic doors are sensitive to different colors of clothing, causing false openings and closings has long been

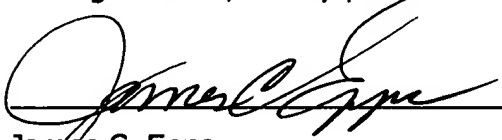
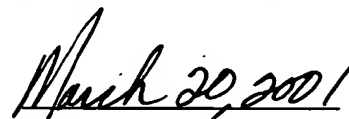
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- known, as shown, for example, in US Patent 4, 029,176 to Mills (Exhibit A); Jonsson '914 or 4,888,532 or 4,590,410 or 4,467,251 (Exhibit B).
18. Jonsson teaches a diffuse lighting system wherein light from one or more emitters is received by one or more receivers. The emitters and receivers are spaced apart from each other to allow a wide light path. As explained in column 6, lines 4-28, Jonsson believed that this arrangement would solve the problem of inappropriate opening and closing caused by different reflectivity (e.g., dark or light clothing) because diffuse light from multiple emitters could be received by multiple receivers.
19. From Jonsson, Column 6, line 55-68, a person of ordinary skill in the art would understand that sensors are mounted about 15" above the floor, ". . . to detect objects near the bottom of the door." (Col. 6, line 67-68.) A person of ordinary skill in the art, reading Jonsson, would be taught that proximity sensors, even those mounted near the bottom of a door, could be tilted upward no more than slightly upward from horizontal direction, so that they would continue to detect objects near the bottom of the door. A person of ordinary skill in the art would not orient the sensors upward at an angle that deviates from a vertical direction by no more than 10° because such sensors would not detect the torso of a person approaching the door and certainly would not detect objects near the bottom of the door, which Jonsson taught.
20. I am familiar with Tsutsumi et al., (US Patent 5,963,000) (Exhibit C) which stated that ". . . the system of U.S. Patent No. 4,560,912 sometimes cannot detect a small object, e.g., an infant, on or near the floor." (Col. 1, lines 53-55.) Tsutsumi et al. is representative of the understanding one of ordinary skill in the art would have of Jonsson, that is, that Jonsson teaches the importance of detecting objects near the floor.

21. I am also familiar with US Patent 4,851,746 to Milke, which is also concerned with the problem of false openings and closings in proximity sensor controlled automatic doors. In discussing the Jonsson series of patents ('410, '912, and '251), Milke explained that the solution proposed by Jonsson was a plurality of emitters that ". . . generate diverging beams of diffuse (rather than focused) radiation . . . " (Col. 2, line 29-30.) Milke is representative of the understanding one of ordinary skill in the art would have of Jonsson as teaching that diffuse beams are the solution to the problem of undesirable opening and closing due to different colored clothing. Milke provides a plurality of downwardly or horizontally directed proximity sensors. Milke demonstrates that one of ordinary skill in the art, aware of both the problem of accurate detection and of the Jonsson reference, would not direct proximity sensors upward at an angle that deviates from a vertical direction by no more than 10° to solve the problem of undesirable opening and closing.
22. Prior to this invention, a person of ordinary skill in the art would have directed proximity sensors to detect the torso of an employee in order to open an automatic door or service window, whether taught by the patent literature or by actual devices made and sold in the United States, just as I and others in the field of service windows did. The person of ordinary skill would not have directed proximity sensors upward at an angle that deviates from a vertical direction by no more than 10° because sensors so directed would not detect the torso of the employee until the service window had already opened.
23. Moreover, in a service window, the possibility that product spills or an employee's body in contact with the sensor would disrupt the function of the sensor would dissuade the person of ordinary skill from directing proximity sensors upward at an angle that deviates from a vertical direction by no more than 10°, as claimed herein.

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I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I declare that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

  
James C. Epps  
Date